NAME _____ DATE _____ PERIOD _____

Lesson 1-1

Practice: Vocabulary and English Language Development

Activate Prior Knowledge

Name an attribute by which each of the items could be sorted.

A chair, a pizza, a swimming pool, and a shoe.

1. chair: _____
2. pizza: _____
3. swimming pool: _____
4. shoe: _____

Definition Review

To **sort** is to put together items that have something in common.

An **attribute** is a characteristic of an object such as color, size, shape, or thickness.

Name a category by which each group could be sorted.

5. cats, dogs, hamsters, Guinea pigs _____
6. maple, oak, pine, birch _____
7. 2, 4, 10, 16, 20 _____
8. ham, turkey, tuna, cheese _____

Application

Follow the directions for the activity.

- Work individually. Each student needs two number cubes.
- Students roll both of the number cubes 8 times.
- For each roll, record the product of the two numbers rolled.
- Students then sort and classify the products as Multiples of 3, Multiples of 5, and Neither.
- Draw a Venn diagram to show the results of sorting the numbers.
- Repeat the exercise, sorting the numbers into 2 different groups.

NAME _____ DATE _____ PERIOD _____

Lesson 1-2

Practice: Vocabulary and English Language Development

Activate Prior Knowledge

Name the repeating part of each pattern below.

1 _____

2 _____

Definition Review

A **pattern** is a sequence of numbers, figures, or symbols that follows a rule or design.

Match each pattern with its repeating part.

3 

4 

5 

6 

Application

Follow the directions for the activity.

- Students work in pairs. Each pair needs a set of colored tiles.
- The first student uses the tiles to create a simple pattern.
- The second student identifies the pattern and tells the next 3 tiles in the pattern.
- Repeat exercise until each student has created 3 patterns.

NAME _____ DATE _____ PERIOD _____

Lesson 1-3

Practice: Vocabulary and English Language Development

Activate Prior Knowledge

Complete each sentence using the words *add*, *subtract*, *multiply*, or *divide*.

1. Carlos brushes his teeth three times a day. To find the number of times he brushes his teeth in a week, we can use the rule _____ 3 for each day.

2. Theo saves 2 pennies on Monday, 4 pennies on Tuesday, 8 pennies on Wednesday and so on. His rule for saving pennies is to _____ the previous day's savings by 2.

3. John buys a 32-ounce bottle of juice. He drinks 8 ounces of juice each day. To find the amount of juice left at the end of 3 days, use the rule _____ 8.

4. Matilda is reading a book that is 240 pages long. After the first day of reading, she has 120 pages left. After the second day she has 60 pages left, and after the third day she has 30 pages left. To find the number of pages Matilda has left to read on the fourth day, we can _____ by 2.

Definition Review

A **rule** tells how numbers are related.

Match the pattern to its rule.

5	6, 21, 36, 51	Divide by 4.
6	64, 16, 4, 1	Add 300.
7	100; 400; 700; 1,000	Subtract 4.
8	2004, 2000, 1996, 1992	Add 15.

Application

Follow the directions for the activity.

- A year is a leap year if it is divisible by 4. If the year is a year ending in 00, then it must be divisible by 400 to be a leap year.
- Students work individually.
- Determine if the following years are leap years:

  1976 _____ 1990 _____ 2000 _____

- Use the rule for leap years to find the number of days in the year you were born.

  Remember: a standard year has 365 days and a leap year has 366 days. _____

NAME _____ DATE _____ PERIOD _____

Lesson 1-4

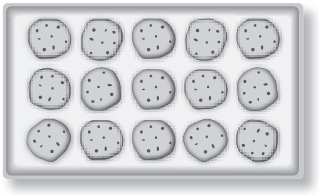
Practice: Vocabulary and English Language Development

Activate Prior Knowledge

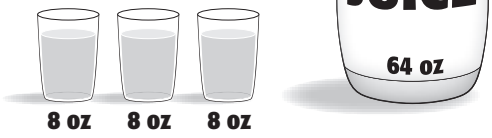
Answer

1 Marlee baked 5 cookie sheets full of cookies. One sheet is shown below. What is the *value* of each cookie sheet? _____

Write and solve an equation to solve for the total number of cookies Marlee baked. _____



2 Simon has 64 ounces of juice. He wants to divide the juice equally into the cups shown below. What is the *value* of each cup? How many cups can he fill? _____



Definition Review

An **equation** is a mathematical sentence that contains an equal sign, indicating that the expression on the left side of the equal sign has the same value as the expression on the right side.

Tell whether each equation is a true equation when $x = 4$.

3 $2 = \frac{x}{2}$ _____

4 $2 = x - 1$ _____

5 $\frac{32}{x} = 9$ _____

6 $40 = 9x + 4$ _____

7 $13 = 4x - 3$ _____

8 $5x + 8 = 30$ _____

Application

Follow the directions for the activity.

- Students work in pairs.
- One student writes an equation of the form $y = mx + b$.
- The other student writes a word problem which can be solved using the equation.
- Both students then solve the problem and compare answers.
- Switch roles and repeat the activity with a different equation.

NAME _____ DATE _____ PERIOD _____

Lesson 2-1

Practice: Vocabulary and English Language Development

Activate Prior Knowledge

Create a scenario for each type of graph. Justify the use of the graph for the created scenario with a brief explanation.

1. Bar Graph _____

2. Picture Graph _____

3. Tally Chart _____

Definition Review

Data is information from a survey or experiment. It can be shown in different ways.

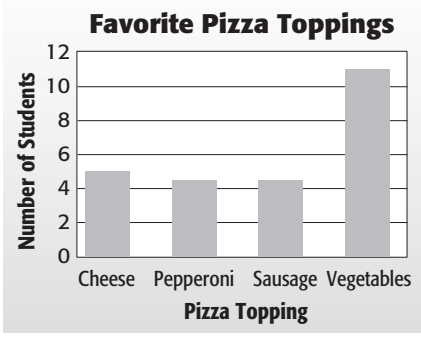
Identify each type of graph or chart.

4. _____ 5. _____ 6. _____

Favorite Pizza Toppings	
Pizza Topping	**Number of Students**
Cheese	
Pepperoni	
Sausage	
Vegetables	

Key: 1 = 2 people

Favorite Pizza Toppings	
Pizza Topping	**Number of Students**
Cheese	
Pepperoni	
Sausage	
Vegetables	



Application

Follow the directions to create a survey, record its responses, and display the results.

- Students work in groups of 4. Each group asks other students a question with at least 3 possible answers.
- Student 1 records the responses in a tally chart.
- Student 2 creates a bar graph to represent the results.
- Student 3 creates a pictograph, with key, to represent the results.
- Write four conclusions that can be drawn from the data.
- Student 4 creates a picture graph to represent the results.

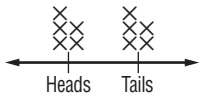
NAME _____ DATE _____ PERIOD _____

Practice: Vocabulary and English Language Development

Activate Prior Knowledge

A coin is "fair" when it lands on heads and tails an equal number of times. For each line graph shown, determine if the coin is "fair".

1 10 tosses of a coin



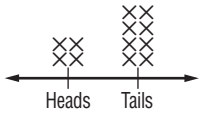
Fair? _____

Explain _____

_____

_____

2 12 tosses of a coin



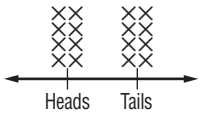
Fair? _____

Explain _____

_____

_____

3 16 tosses of a coin



Fair? _____

Explain _____

_____

_____

Definition Review

Data recorded in a **tally chart** can be used to create a **line plot.** A **line plot** helps summarize the results of data.

Fill in the blanks.

4 A _____ is a mark made to keep track of data.

5 A _____ is a graph that uses X's above a number line to show the frequency of data.

6 In a picture graph, the _____ tells the amount each picture represents.

Application

Follow the directions to create a survey, record its responses, and display the results.

- Students work in groups of 3. Each group chooses a spinner or a number cube.
- Student 1 performs the experiment a total of 25 times.
- Student 2 records the results in a tally chart.
- Student 3 creates a line graph from the tally chart data.
- Each group discusses the results of the experiment and writes at least three conclusions that can be drawn from the data collected.

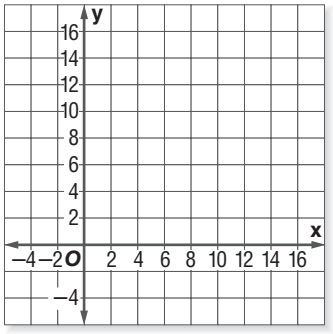
NAME _____ DATE _____ PERIOD _____

Lesson 2-3

Practice: Vocabulary and English Language Development

Activate Prior Knowledge

Use a coordinate grid to locate and label points.



The city of Philadelphia was laid out in a grid pattern by William Penn and Thomas Holmes. Use a coordinate grid to find locations.

1. Locate and mark the origin. Label it "City Hall". Give its coordinates.

_____

2. Move east 9 blocks. Mark the point and label it "Liberty Bell". Give its coordinates.

_____

3. Move south 1 block. Mark the point and label it "Independence Hall". Give its coordinates.

_____

4. Move east 3 blocks and north 2 blocks. Mark the point and label it "Betsy Ross House". Give its coordinates.

_____

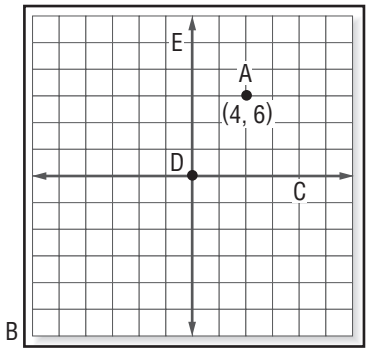
5. Move west 2 blocks. Mark the point and label it "U.S. Mint". Give its coordinates.

_____

Definition Review

Match the vocabulary word to its location on the graph.

6. origin _____
7. *x*-axis _____
8. *y*-axis _____
9. ordered pair _____
10. coordinate grid _____



Application

Follow the directions to demonstrate plotting a point.

- Work as a class and follow directions.
- Clear an area on a tile floor. Use tape to mark the *x*- and *y*-axes, and, if needed, to mark the grid lines.
- The teacher writes ordered pairs on the board.
- One at a time, students start at the origin and walk along the grid to the location of a specified ordered pair.
- Repeat until all students have graphed a point.

NAME _____ DATE _____ PERIOD _____

Practice: Vocabulary and English Language Development

Activate Prior Knowledge

Identify the table that corresponds to each equation.

1. $y = x + 2$ matches _____
2. $y = 2x$ matches _____
3. $y = x - 2$ matches _____
4. $y = \frac{x}{2}$ matches _____

Table A

x	y
–2	–4
–1	–3
0	–2
1	–1
2	0

Table B

x	y
–4	–2
–2	0
0	2
2	4
4	6

Table C

x	y
–2	–4
–1	–2
0	0
1	2
2	4

Table D

x	y
–4	–2
–2	–1
0	0
2	1
4	2

Definition Review

To graph an equation using an **input/output table,** substitute different input values into the equation. Evaluate the equation to find the output values.

Fill in the blanks.

5. The input value and its corresponding output value can be written as an _____ and graphed.
6. The _____ values can be selected at random. The _____values are the results.

Application

Follow the directions to find the equation.

- Students work in pairs with paper and pencils.
- The first student thinks of an equation (for example: $y = 5x$ or $y = x - 4$) and creates an input/output table for this equation.
- The first student gives the input/output table to the second student, but does not reveal the equation.
- The second student examines the table and writes the equation he or she believes created the input/output table.
- If the correct equation is found, the second student earns 1 point. If the equation is not found, the first student earns 1 point. If it is discovered that the table was incorrectly formed, the second student earns 1 point.
- Reverse roles and continue play until both students have created five equations. The student with the most points wins.

NAME _____ DATE _____ PERIOD _____

Lesson 3-1

Practice: Vocabulary and English Language Development

Activate Prior Knowledge

1 List three classroom rules. _____

_____

2 List three rules for numbers. _____

_____

3 What is the rule for the following sequence of numbers? _____

12, 17, 22, 27, 32

Definition Review

Patterns follow a **rule.** A **rule** describes the relationship that one element of a sequence has with another element of the sequence.

What is the next element of each pattern?

4  _____

5 + + − − − + + _____

6  _____

7  _____

8 ▲▼◀▶▲▼◀▶▲ _____

Application

Follow the directions for the activity.

- Work in groups of 2 or 3.
- Each student chooses a different sound to make. Some suggestions are to use their hands for snapping or clapping, use a book and pencil for a drum, or whistle.
- Work together to create a different pattern of sound for each student.
- Experiment with patterns of sound to create simple melodies.
- After practicing, each group shares its melody with the rest of the class.

NAME _____ DATE _____ PERIOD _____

Lesson 3-2

Practice: Vocabulary and English Language Development

Activate Prior Knowledge

List examples of ratios you might encounter in your daily life.

1 _____

2 _____

3 _____

Definition Review

The **ratio** is the relationship between two quantities in which the first measures a certain number of units and the second measures another number of units.

Read the problem. Complete each sentence.

Pablo spent 2 hours on a 7-mile hike on Saturday. Maggie spent 3 hours on a 9-mile hike on Sunday.

4 The ratio of miles Pablo hiked to the miles Maggie hiked is _____ : _____ .

5 _____ hiked 2 miles more than _____ .

6 Pablo hiked at a rate of _____ miles per hour.

7 Maggie hiked at a rate of _____ miles per hour.

8 _____ hiked faster than _____ .

Application

Follow the directions for the activity.

- Work in groups of 3 or 4.
- Find 5 ratios in the classroom.
- Consider creating ratios using each other or various items in the room.
- Share your ratios with the rest of the class.
- Did any groups think of similar ratios?
- How many different ratios did the class find?

NAME _____ DATE _____ PERIOD _____

Lesson 3-3

Practice: Vocabulary and English Language Development

Activate Prior Knowledge

List three examples of proportions you might use in your daily life.

1 _____

2 _____

3 _____

Definition Review

A **ratio** is the relationship between two quantities in which the first measures a certain number of units and the second measures another number of units.

A **proportion** is an equation stating that two ratios or rates are equivalent.

Determine whether or not the ratios are proportions. Write *equivalent* or *not equivalent*.

4 $\frac{4}{5}$ and $\frac{36}{45}$ _____

5 $\frac{3}{7}$ and $\frac{32}{56}$ _____

6 $\frac{2}{3}$ and $\frac{64}{96}$ _____

7 $\frac{3}{24}$ and $\frac{9}{72}$ _____

8 $\frac{18}{20}$ and $\frac{81}{100}$ _____

Application

Follow the directions for the activity.

- Work individually.
- Draw a floor plan of the classroom without knowing measurements.
- Drawing must include all walls, windows, doors, and desks.
- Then work in small groups to find the actual measurements of the walls, windows, doors, and desks.
- Determine an appropriate scale and draw a new floor plan of the classroom.
- Compare the original drawing with the second drawing.
- Discuss the importance of using scales and using proportions when creating floor plans, maps, blueprints, and model planes or cars.

NAME _____ DATE _____ PERIOD _____

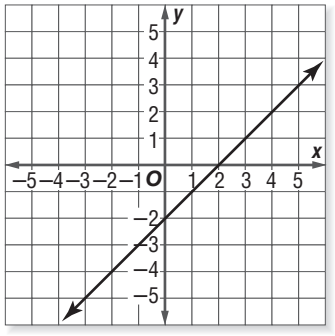
Lesson 4-1

Practice: Vocabulary and English Language Development

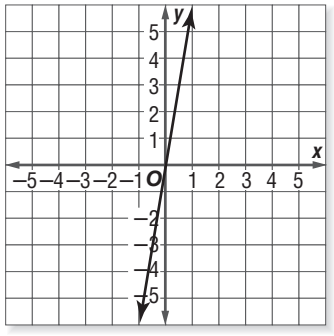
Activate Prior Knowledge

Match the function to its graph.

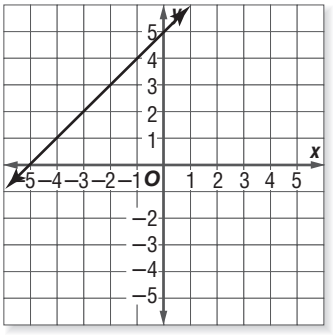
A



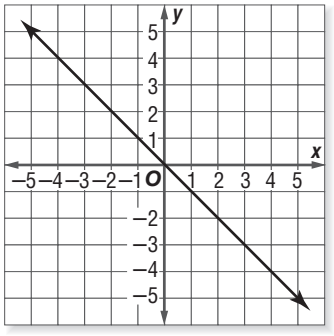
B



C



D



1 $y = 6x$ _____ 2 $y = -x$ _____ 3 $y = x - 2$ _____ 4 $y = x + 5$ _____

Definition Review

A **linear function** is a set of ordered pairs that are related to each other by a constant rate. The notation, y, is the output value for a function, given the input value x.

A **function table** uses the function, or rule, to create ordered pairs. The graph of a linear function is a line.

Fill in the blanks with these words: function, ordered, rule, *x*, and *y*.

5 An input/output table is also called a _____ table. The input is the _____ -value in the table and the output is the _____ -value in the table.

6 The x- and y-values from the table are the _____ pairs which are graphed.

7 The equation of the function is the _____ of the function.

Application

Follow the directions to explore linear function graphs.

- Students work in groups of 3 or 4.
- Each student writes a different function in the form $y = x + b$, where b is an integer between –10 and 10.
- Each student in the group graphs his/her function.
- Discuss the similarities and differences between the function graphs.
- Repeat for $y = 2x + b$ and $y = -3x + b$.

Chapter 4

NAME _____ DATE _____ PERIOD _____

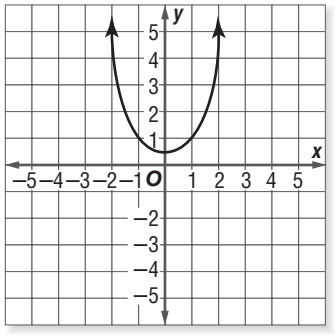
Lesson 4-2

Practice: Vocabulary and English Language Development

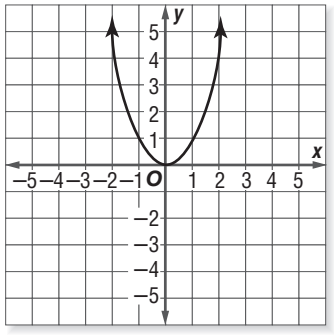
Activate Prior Knowledge

Match the function to its graph.

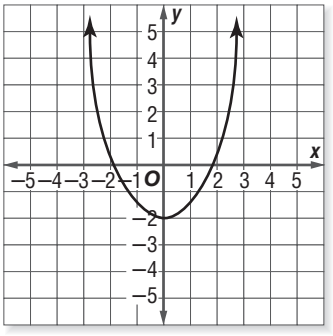
A



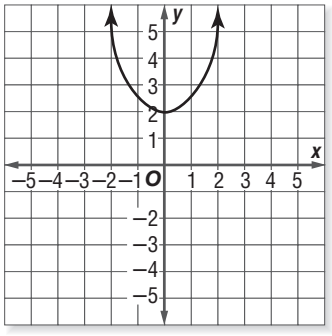
B



C



D



1 $y = x^2$ _____

2 $y = x^2 + 1$ _____

3 $y = x^2 + 2$ _____

4 $y = x^2 - 3$ _____

Definition Review

A **nonlinear function** is a set of ordered pairs that are related to each other by a non-constant rate. A **function table** can be used to create ordered pairs.

Choose the correct word to complete each statement.

5 A linear function is a set of coordinates related to each other by a (constant/non-constant) _____ rate.

6 A nonlinear function is a set of coordinates related to each other by a (constant/non-constant) _____ rate.

7 A (linear/non-linear) _____ function has a graph which is a straight line.

8 A (linear/non-linear) _____ function has a graph which is not a straight line.

Application

Follow the directions to explore nonlinear function graphs of the form $y = ax^2$.

- Students work in groups of 3 or 4.
- Each student writes a different function of the form $y = ax^2$, using a different integer between 1 and 10 for a.
- Each student creates and completes a function table for his/her function with values -2, -1, 0, 1, and 2 for x.
- Each student graphs his/her function.
- Compare graphs. Discuss similarities and differences.
- Repeat exercise using integers between -10 and -1 for a.

NAME _____ DATE _____ PERIOD _____

Lesson 4-3

Practice: Vocabulary and English Language Development

Activate Prior Knowledge

Answer.

A given highway section has a rise of 2 miles over a distance (run) of 25 miles.

1. Find the slope of this section of highway. _____

2. Convert the slope to an equivalent fraction in hundredths and write the slope as a decimal. _____

3. The ratio of rise to run of a highway is called its grade. The grade is generally given in percent form. Find the percent equivalent of this slope. _____

Definition Review

A **ratio** shows a constant rate of change between two quantities.
The **slope** of a line illustrates the **ratio** of the number of units of *rise* to number of units of *run* for a linear function.

Choose the correct word to complete each statement.

4. The ratio of the change in y-value to the change in *x*-value of a line is the (function/slope) _____ of the line.

5. A ratio is a comparison by (multiplication/division) _____.

6. The ratio of rise to run for a line is (constant/not constant) _____.

Application

Follow the directions to explore linear slope.

- Work in pairs.
- Complete the table for a line with slope $\frac{1}{1}$.

x	1	3	5	7	9
y	2	8	14	20	26

- Graph the points and connect them to form a line.
- Complete the table for a line with the slope $\frac{2}{1}$.
- Graph points and connect them to form a line. Graph the line on the same grid as the previous line, using a different color pencil and labeling the line.
- Repeat previous two steps for slopes $\frac{3}{1}$, $\frac{4}{1}$, and $\frac{5}{1}$.
- Discuss the effect on lines having successively bigger slopes.

Chapter 4

NAME _____ DATE _____ PERIOD _____

Lesson 4-4

Practice: Vocabulary and English Language Development

Activate Prior Knowledge

Write and graph an equation to represent the data. Solve.

Valerie makes and sells candles. She can make 4 candles every half-hour. Let x represent the number of half-hours and y represent the number of candles made.

1. What is the equation of the line? _____
2. What is the slope of the line? _____
3. What is the y-intercept of the line? _____
4. Graph the equation of the line.
5. Examine the y-values of the line graph. How long will it take Valerie to make 20 candles?

   _____
6. Examine the x-values of the line graph. How many candles can Valerie make in 4 hours?

   _____

Definition Review

Slope is rise/run. You can find the slope of a line from the graph of that line, or by using the slope formula.

Complete the following.

7. Give the slope formula. _____
8. Explain how to find the slope using the terms "vertical" and "horizontal."

   _____
9. Explain how to find the y-intercept from a graph.

   _____
10. Give the slope-intercept equation of a line. _____

Chapter 4